

WHAT IS CLAIMED IS:

1. An apparatus for treating at least partially fixed biological tissue to inhibit calcification of the tissue following implantation in a mammalian body, comprising:

a flow container;

a supply of treatment fluid;

a fluid input to the container;

a fluid output from the container;

a tissue mount for positioning the at least partially fixed biological tissue within the container between the input and output and restrain its gross movement therein; and

means for heating the fluid

2. The apparatus of Claim 1, wherein the flow container is divided into at least two sections in series separated by perforated baffles, with at least one tissue mount in each section.

3. The apparatus of Claim 2, wherein the flow container is an elongated tube and the baffles are circular.

4. The apparatus of Claim 1, wherein the tissue mount is configured to mount the tissue in a planar configuration substantially parallel to the direction of flow of the solution flowing through the container.

5. The apparatus of Claim 1, further including at least one baffle positioned in the flow container and upstream of the tissue mount, the baffle being configured to create a substantially uniform downstream flow profile over a cross-section of the flow container.

6. The apparatus of Claim 5, wherein the baffles are perforated plates oriented substantially normal to the direction of flow of the solution flowing through the container, and the flow container is divided into at least two sections in series, each two adjacent sections being separated by a baffle, with at least one tissue mount in each section removably secured to one of the baffles.

7. The apparatus of Claim 1, wherein the supply of fluid comprises a reservoir, and the means for heating the fluid comprises a heater for heating fluid in the reservoir.

8. The apparatus of Claim 7, further including a sensor for monitoring the fluid temperature in the reservoir, and a feedback control loop responsive to the sensed temperature for adjusting the heater temperature.

9. The apparatus of Claim 1, wherein the flow container comprises an upstanding tube, the inlet aperture is in the lower end of the tube and the outlet aperture is in the upper end of the tube, the apparatus further comprising a velocity reducer above the inlet aperture, and a flow straightener above the velocity reducer and below the first tissue mount.

10. An apparatus for treating at least partially fixed biological tissue to inhibit calcification of the tissue following implantation in a mammalian body, comprising:
a container suitable for containing tissue treatment fluid;
means for causing treatment fluid movement within the container; and
means for heating the treatment fluid.

11. The apparatus of Claim 10, wherein the means for causing fluid movement within the container comprises a shaker.

12. The apparatus of Claim 11, wherein the shaker is an orbital shaker.

13. The apparatus of Claim 10, wherein the means for causing fluid movement within the container comprises a stirrer immersed in the treatment fluid.

14. The apparatus of Claim 13, wherein the stirrer is a stirring rod.

15. The apparatus of Claim 14, further including a shaft drive for the stirring rod.

16. The apparatus of Claim 15, further including a magnetic drive for the stirring rod.

17. The apparatus of Claim 13, further including means for restraining the immersed tissue from gross movement within the container.

14 18. The apparatus of Claim ¹²17, wherein the means for restraining tissue from gross movement within the container comprises a porous substrate separating the tissue from the stirrer.

17 19. The apparatus of Claim ¹⁶18, wherein the container has an open mouth and the porous substrate is draped over the open mouth and separates the container into an upper portion for receiving the tissue and a lower portion for receiving the stirrer.

18 20. The apparatus of Claim ¹²19, wherein the means for heating comprises a heater adjacent to the container that applies heat to the outside of the container and indirectly heats the treatment fluid therein.

19 21. The apparatus of Claim ¹⁸20, wherein the heater comprises a resistive heater.

20 22. The apparatus of Claim ¹²21, wherein the means for heating comprises a heater that applies heat directly to the treatment fluid.

21 23. The apparatus of Claim ¹²22, wherein the heater is external to the container.

24. The apparatus of Claim 24, wherein the heater comprises a convective flow heater.

25. The apparatus of Claim 10, wherein the container is a flow container and further including a system for flowing treatment fluid through the flow container.

26. The apparatus of Claim 25, further comprising means for restraining the tissue from gross movement within the flow container.

27. The apparatus of Claim 26, wherein the means for restraining the tissue from gross movement within the flow container comprises a mount for mounting the tissue in a planar configuration substantially parallel to the direction of flow of the treatment fluid.

24 28. The apparatus of Claim ²⁵27, wherein the flow container has a cross-section oriented substantially normal to the direction of flow of the treatment fluid, the apparatus further including a baffle positioned upstream of the mount which creates a substantially uniform downstream flow profile over the container cross-section in the region of the mount.

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25. ~~29~~. The apparatus of Claim ~~28~~²⁴, further comprising a plurality of perforated baffles dividing the flow container into a series of sections, and a plurality of said mounts in each section for mounting multiple tissue pieces within each section.

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26. ~~30~~. The apparatus of Claim ~~28~~²³, further comprising a reservoir external to the
5 container, the flow container having an inlet and an outlet, and a pump for circulating treatment fluid from the reservoir to the flow container and expelling fluid from the flow container outlet back to the reservoir.

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27. ~~31~~. The apparatus of Claim ~~30~~²⁶, wherein the means for heating heats the treatment solution in the reservoir.

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